DOCUMENT RESUME

ED 170 626 CG 013 414

AUTHOR Pfouts, Jane H.
TITLE Birth Order, Sibling IQ Differences, and Family Relations.
PUB DATE Oct 78
NOTE 21p.; Paper presented at the Annual Meeting of the National Council on Family Relations (Philadelphia, Pennsylvania, October 19-22, 1978)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Birth Order; *Family Influence; *Family Relationship; Individual Development; *Intelligence Differences; Males; Research Projects; *Siblings; Social Factors; *Socialization
IDENTIFIERS *Slosson Intelligence Test

ABSTRACT

The differential impact of birth order and IQ on sibling roles were examined with particular interest focused on achievement outcomes. Subjects were a stratified sample of 37 pairs of near-in-age siblings, all within the normal range in personality and IQ, but differing significantly in scores on the Slosson IQ Test. Results indicate that when the younger brother is intellectually more talented than his older brother, assignment of sibling roles appears to depend more on birth order socialization factors than on individual potential. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED170626

BIRTH ORDER, SIBLING IQ DIFFERENCES, AND FAMILY RELATIONS

Jane H. Pfouts
School of Social Work
University of North Carolina
at Chapel Hill

Presented at the National Council on Family Relations, Philadelphia, October, 1978

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. H. Pfouts

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

CG013414

That first and later born sons differ in important ways has been convincingly demonstrated in the birth order literature for over a century. It has been suggested that differences in sibling personality traits and achievement stem from the different roles which children play in the sibship because of dissimilar treatment by parents based on birth order differences. (Sletto, 1934)

The evidence strongly suggests that the first born are trained within the family to prefer the parent surrogate role (Sutton-Smith et al, 1964) and to assume task oriented leadership positions both with younger siblings and outside the family. In contrast, the later born tend to be more dedicated to sociability and to peer relations than to task achievement. (Chemers, 1970).

The most compelling argument for differential family relations is the striking contrast between the large number of research findings on the unique and lasting effects on an older son of parent-child interaction and the paucity of evidence suggesting any parental influence on his younger brother in a two-boy family. It would appear on the basis of available evidence that with the second son the parental imprint is weaker, the sibling imprint stronger, and the outcome of socialization more variable.

Perhaps the clearest demonstration of the differential socialization of first born and later born sons can be found in the area of academic achievement (Altus, 1966). Among researchers there is fairly unanamous agreement that parents put more pressure on first borns to achieve (McArthur, 1956; Sampson, 1962; Sears, 1950; Sutton-Smith et al, 1964) and that first borns do exactly that. The first born talk at an earlier age, read earlier (Price,

1969) articulate better at school entering age (Koch, 1956a) are better at tests of spatial relations (Koch, 1954) and can solve a puzzle be[illegible] at the age of five (Rothbart, 1971) than second born.

Clearly, by the time the first born enter school, they are better prepared than are the later born to achieve academically and the evidence is compelling that they do. The first born make better grades than later born (Pierce, 1969; Elder, 1962; Schachter, 1963; Oberlander and Jenkin, 1967; Chittenden, et al., 1968; Lees and Stewart, 1957; Douglas, 1964) and are more likely to attend and graduate from college and graduate school (Bender, 1928; Altus, 1966; Hall and Barger, 1964; Warren, 1966; Capra and Dittes, 1962; Harris and Howard, 1968). They are also more likely to achieve eminance in their careers (Altus, 1966; Galton, 1874; Ellis, 1926; Roe, 1953)

Although it is the usual finding that the first born, at all ages, score slightly higher than later born on IQ tests (Terman, 1925; Altus, 1962; 1965; 1966; Adams and Phillips, 1972; Oberlander and Jenkin, 1967; Burton, 1968; Lunneborg, 1968) there appears to be no very convincing reason for assuming genetic differences in intelligence between ordinal positions. A number of studies have, in fact, shown no birth order differences in IQ scores (Schoonover, 1959; Douglas, 1964; Clauson, 1966) and a few have found the IQ scores of the second born to be higher (Roberts, 1938; de Lint, 1967)

Most researchers are convinced, in spite of the evidence of better first born academic performance, that intelligence is not a true variant of birth order. Rather as Bayley (1965) has suggested, it is the greater parental interaction and the more stringent achievement training which drive him to greater academic success than his younger, less pressured sibs

(Sampson, 1965; West, 1960; Ring et al., 1965) Perhaps he raises his IQ in the process (Altus, 1965) or perhaps he just becomes a more skilled and motivated test taker.

There is some evidence that first born males are more creative and prefer greater complexity than later born males (Eiseman, 1968; Eiseman and Robinson, 1967; Eiseman and Cherry, 1970; Lichtenwalner and Maxwell, 1969; Helson, 1968; Rosenberg and Sutton-Smith; 1969) Other studies, however, show no significant birth order-creativity effect (Stock and Looft, 1969; Looft and Baranowski, 1971) If, in fact, the first born is more creative and thinks more complexly, this may help explain his intellectual edge over the later born. It may be that the greater parental reinforcement of the first born male for each new achievement, and the greater stimulation the first born enjoys by being asked by younger sibs for help in problem solving, enhances creativity as Lichtenwalner and Maxwell suggest. It seems to this writer also possible that creativity and complexity of response are required from the first born from the beginning, in order for him to cope with the complex and ambiguous adult world into which he is born. The later born, more immersed in child-level interactions, is, perhaps, freer to respond to this more primitive world with fantasy and immagination, which is creativity not for problem solving but for its own sake. This explanation is consistent with Altus' (1968) finding that the later born more often are art or music majors in college while the first born more often choose the "hard" sciences and mathematics. It also fits with Exner and Sutton-Smith's (1970) study which reveals that first born in the peace corps function best as science teachers and the later born as English teachers. Finally, support comes from

the finding that the later born are over-represented among poets and writers (Bliss, 1970)

It is also possible that these birth order differences in career preference can be explained by a basic difference between the first and later born in cognative styles. Harris (1964) suggests that the first born show "connectedness" and tend toward synthesis, abstraction, and determinism. In contrast, the later born manifest and value "disconnectedness" and tend toward analysis and particularistic non-deterministic thinking. According to Lynn (1969) stronger identification of a child with his moderately distant father promotes "connectedness" while stronger identification with the more immediately present mother produces "disconnectedness". Lynn does not discuss birth order differences, but it appears reasonable, in view of what is known about the special relationship of the first born son with his father, that he more than his younger borthers, is likely to develop what might be termed the masculine cognative style. For example, in the middle class two boy family there is a tendency for both father and mother to value the birth of the second son less (Sears et. al., 1957; Krout, 1959) presumably because they already possess a male heir to carry on the family name and further the family fortunes. Primogeniture still operates to the extent that the older son is much more likely than a younger brother to be named for his father (Rossi, 1965) and to be chosen by his father to perpetuate his knowledge, skills, and ambitions (Cobb and French, 1966; Harris, 1964). There is scattered evidence that with a first born son the father engages in the child-rearing process more actively than he does with later born sons. Mothers in a child rearing study (Sears et. al., 1957 reported that fathers had more

contact with first borns and took more responsibility for their discipline -- particularly boys. In a college sample (Henry, 1957), first born males mor often named their fathers as principal disciplinarians while later born sons more often named their mothers. Vuyks (1961) points to the greater identification of first born with the father by noting that in his sample older children in German families behaved more like the father.

In building a case for the clear superiority of the first born in scholarly and scientific areas, it is well to remember, as Clausen (1966) has pointed out, that it is not known whether first born dominate in other fields as well. It may well be that later born sons are more successful in those careers which demand high social and relationship skills as in the fields of politics, psychotherapy, social work or public relations. The reason for the greater social success of the second born son is that, unlike his older brother, he early masters the intracacies of peer relations in interaction with an older same-sex sib. With all its disadvantages, his subordinate sibling position gives him the great advantage of being forced to learn to deal with the moods, the unpredictability, and the demands of a more powerful child while at the same time mastering the older boy's masculine skills and learning from his mistakes.

If in fact, a tendency exists for first and later born children to "choose" different life styles in some systematic way because of the accident of ordinal position, it is important to learn more about how, why, and with what effects these fateful choices are made.

The case of the first born appears fairly straightforward. We are quite sure, on the basis of the research discussed earlier that the first born son in the two boy family "choses" adult interests because of the nature

of his identification with his parents, particularly his father. In middle class families this is likely to mean that academic achievement and task oriented responsibility are stressed and valued as the research on first born achievement training suggests.

But on what basis does the younger son choose his interests? The generally accepted hypothesis seems to be that his choice is a reactive one, based on his need to create a unique role for himself within the family. Bossard and Boll (1955) referring to the large family system, offer a division-of-labor hypothesis in which younger sibs chart out areas of performance that have not already been appropriated by older sibs in order to gain individual recognition and family status. McArthur (1956), discussing the two boy family, sees a similar division of interests, but he more than Bossard emphasizes the negative motivation of the second born to avoid competition with his older brother for the role of responsible sib by opting instead for peer approval.

Newcombe and Svehla (1937) report that sibs are less likely to show similar attitudes than parents and children, and the closer in age two brothers are, the more different are their attitudes. Since it is mainly the younger who models the older or rejects him as a model (Lynn, 1969) we can assume that, by and large, the attitude differences between brothers can be accounted for by the younger sib's desire for difference.

There are a number of important questions, however, to which we still have no answers. For example, what variables influence the second born's decision either to accept his brother's interests as his own or to reject them as undesirable or unattainable? How important a factor is the relative intellectual ability of the two brothers in role assignment? What is the effect on the sibling relationship and on each of the children of similar or

dissimilar interests? In order to answer these questions researchers must give up some of their obsessive concern with the first born and concentrate more on relationship patterns and relative characteristics within the sibhood.

Although there has been a tremendous amount of research on correlates of individual intellectual functioning during childhood, only a handful of studies have dealt with the effect of sibling IQ differences on individual functioning and on family relations. What little has been done deals with mentally retarded or psychiatrically disturbed children and their normal sibs (e.g. Smalley, 1930; Farber and Jenne, 1963; Schrieber and Feeley, 1965) rather than with siblings, who, while differing significantly in intellectual ability, all function within the normal range.

Birth Order, Sibling IQ Differences, and Family Relations Study

My study on birth order, sibling IQ differences, and family relations is based on Festinger's Social Comparison Theory (1954) which holds that an individual defines himself by comparing himself to relevant similar others. Sibling interaction is a classic example of this process (Pfouts, 1977). Particularly in middle class families, the intellectual achievement of children tends to be highly valued by parents and thus sibling social comparison on the basis of relative intellectual abilities is likely to be one important basis of sibling social comparison.

Hypothesis

My study hypothesizes that it is the first born who is psychologically most vulnerable in sibling social comparison of academic achievement because he is assigned the role of scholar in the family. Like the underdog challenger

fighting the champion, when the later born child does not do as well in intellectual areas as the first born, nobody in the family, including himself, expects it anyway, and he is rewarded for "trying" not sanctioned for "failing". Therefore, the younger child is in the position of having everything to gain and nothing to lose while the first born has nothing to gain and everything to lose should a role reversal occur. This hypothesis was only partially confirmed because it overestimated the power of intellectual ability and underestimated the power of birth order in sibling role assignment.

Sample

My sample includes 37 pairs of near-in-age latency age brothers in two child, white, intact urban middle class families. The sample was stratified to include three sibling IQ difference groups: Group 1: Sixteen pairs of brothers, all bright, superior, or gifted with Slosson IQ scores which are not statistically different (i.e. within 15 points); Group 2: Ten pairs of brothers, all superior or gifted, in which the younger brother scores significantly higher on the Slosson than the older brother; Group 3: Eleven pairs of brothers, all bright, superior or gifted in which the older brother is significantly higher on the Slosson than the younger brother.

Instruments

In addition to the Slosson, each pair of brothers was compared on the Bene-Anthony Family Relations Test, the California Test of Personality, teachers ratings on the Coopersmith Self Esteem Scale and parent questionaires. Differences among the three IQ difference groups were tested for significance using the Kendall Tau nonparametric rank order correlation. In the discussion which follows the older brothers will be referred to as M_1s (i.e. first born males) and the younger brothers as M_2s (i.e. second born males).

Findings

Overall Sample

1. The overall sample shows clear birth order differences consistant with the literature. The California Test of Personality, parents' reports and teachers reports are in agreement that the M_1s as a group are serious, responsible, reserved, dependent, sensitive, and competitive while the M_2s as a group are sociable, easygoing, athletic, immaginative and independent.
2. Both the M_1s and the M_2s are at least above average students and the majority are excellent students. However, as a group, the M_1s were rated by parents (.001) and teachers (N.S.) as more academically successful than the M_2s.
3. Academic performance and IQ are positively associated for the M_2s (.04) but not for the M_1s. This suggests that M_1s are overachievers and M_2s tend to perform according to ability. This further suggests that M_1s possess a unique personality syndrome which serves as a functional equivalent for an unknown number of IQ points.

   Failure to meet academic self expectations is more distressing for the M_1s than the M_2s. Unlike M_2s, M_1s in this situation have unsatisfactory school relationships (.03) and tend to withdraw (.04).
4. Social comparison superiority over sib is associated with psychological assets for the M_1s but not the M_2s. M_1s who have higher social comparison scores based on parent and teacher reports of academic, athletic, and social ability tend to have high personal adjustment (.02) while M_2s with higher scores tend to have low personal adjustment (.05). There are, however, variations within the three stratified IQ difference groups.

IQ Difference Group 1: (16 pairs of brothers all bright, superior, or gifted with Slosson IQ scores that are not statistically different)

When M_2s are equal in IQ to their M_1s, they model their older brothers academically (<.01) and are recognized by both parents and teachers as equally successful in this area. In essence, birth order differences are blurred in this group with the result that M_1s feel threatened and M_2s feel exhilirated. The M_1s have the worst relationship of M_1s in all three groups with both their fathers (.06) and their M_2s (.08) while M_2s are not affected in their relationships with fathers and are the least hostile of all M_2s to their M_1s. Neither M_1s nor M_2s are affected in their relationship with their mothers.

The most rivalrous M_1s and M_2s are to be found in this group. However, competition affects them differently. The M_1s are lower and the M_2s are higher in a sense of personal worth than in any other IQ groups. However, the competition offered by an equally able younger brother apparently stimulates as well as threatens the first born because, more than other first born in the sample, these M_1s are popular with other children (<.01) not subject to depression (<.01) emotionally mature (.05) and willing to share with their sibs (.06). Parents and teachers rate the M_1s and M_2s equal in social skills but the M_2s are judged clearly superior in athletic ability (<.001).

For this group of equally able sibs the hypothesis is confirmed in that the first born is psychologically more vulnerable than the second born in sibling social comparison of academic achievement.

IQ Difference Group 2: (10 pairs of brothers all superior or gifted but in each pair the M_2 is significantly higher on the Slosson than his M_1)

It had been expected that these less intellectually able M_1s would suffer very adverse effects from social comparison with their more gifted

younger brothers. However, this did not occur, at least in the dramatic form that was anticipated. As a group, the M_1s maintain first born status by taking an athletic role rather than an academic one. These less intellectually able M_1s are better athletes than M_1s in any other group ($>.05$) and their highly intelligent M_2s model them athletically (.05) so that the physically more mature M_1s are able to maintain superiority in this area. Apparently the M_2 are underachievers and the M_1s are over achievers academically for neither parents nor teachers report any significant birth order differences in academic performance.

Family relations are not marked by any unusual difficulties for the M_1s with their fathers, mothers or M_2s, but there is evidence that these atypical M_1s suffer some discomfort from their threatened status in that they are less easygoing, (.06) and more easily excited (.05) than M_1s in any other IQ difference groups.

Ironically, it is the more talented M_2s who suffer from role incongruity fare more than the less able M_1s. Although these talented younger sons get on well with their fathers, their relationships with their mothers and their M_1s are marked by hostility. The M_2s have fewer negative feelings toward their fathers ($<.01$) and more negative feelings toward their mothers ($<.05$) and their M_1s (.05) than M_2s in any other group. These M_2s are also characterized as more competitive with peers ($<.01$), lower in self esteem (.06) and higher in egocentricity ($<.01$) than other M_2s. Egocentricity may be a self reinforcement response to perceived inequity in sibling social comparison -- particularly from mothers. It is likely that these highly able M_2s have more reason to be resentful of maternal overvaluation of their M_1s than would M_2s who are equal or inferior intellectually to their M_1s.

It may also be that the M_2s low sense of personal worth stems from the efforts of other family members to maintain M_1s birth order superiority. Thus it is likely that M_2 efforts to assert M_1-like intellectual powers are greeted within the family with derision, aannoyance or anger, particularly when the M_2 shows his older brother up as a less accurate mathamatician, a less fluent reader, or a less clever debater.

IQ Difference Group 3: (11 pairs of brothers all bright, superior or gifted in which the older brother is significantly higher on the Slosson than the younger brother).

The hypothesis of this study affirms that when the first born is intellectually superior to his younger brother sibling social compairson is congruent with family expectations and sibling roles are stable and satisfying.

Certainly, these M_1s are well suited to the role in which they have been cast by the culture. They are acknowledged to be academically superior to their M_2s by parents ($<.001$) and teachers ($<.001$). They are both arrogant and anxious in that, compared to other M_1s in the sample, they have lower social adustment (.05), are less willing to share with M_2 (.06) are more critical of others, ($<.01$) more self centered ($<.01$) and less popular with other children ($<.01$). In contrast, the less able M_2s present a picture of non-competitive wellbeing. These M_2s are less self reliant ($<.05$), more easygoing (.07) and more self confident and poised in the classroom (.06) than other M_2s. No difference was found between the M_1s and the M_2s in athletic ability but the M_2s are superior to their M_1s in social ability ($<.01$). In family relations, there is a split. M_1 is father's boy

and M_2 is mother's boy. The M_1s have the highest positive feelings for their fathers ($<.01$) and the M_2s have the highest negative feelings for their fathers ($<.01$) of all three IQ difference groups. This somewhat angry M_2 relationship with their fathers contrasts sharply with their very warm relationship with their mothers, the most positive enjoyed by any M_2 group ($<.05$). This conforms to a pattern observed in all 3 IQ difference group. Both M_1s and M_2s who are brighter than their sibs get along better with their fathers than any other M_1s and M_2s. The M_1s relationship with their mothers is not affected by IQ difference group membership but less bright M_2s have a better relationship with their mothers and brighter M_2s a worse one. Both parents stereotype the birth order status to some extent but fathers more than mothers appear to appreciate ability in the second born when it is equal or superior to that of the first born.

Conclusion

The implications of these findings have obvious relevance for parents. My findings and those of hundreds of other studies suggest that while discrimination in favor of the first born son is usually not conscious, it is still a very real factor in socialization within the family and the total culture. The first born son accepts his special position as his birthright and the second son also accepts the primacy of his M_1 and makes up for his lack of family reinforcement by rewarding himself and by seeking peer reinforcement.

When children are assigned roles according to birth order, they tend to accept them, but often, just as in sex role assignment, the potential that exists in a child for different kinds of behavior is never realized. M_1s, in general, overachieve academically but score less well than M_2s

socially. In contrast, M_2s are more playful, independent, and relaxed but they score less well in academic and scientific endeavors and according to the literature fewer than should ever achieve eminence.

If parents were alerted to how roles are assigned and how children are shaped to fit those roles, regardless of potential, perhaps birth order differences in these areas would become less fateful.

BIBLIOGRAPHY

Adams, R. L., and Phillips, B. N. "Motivational and achievement differences among children of various ordinal birth positions." Child Development, 1972, 43, 155-164.

Altus, W. D. "Sibling order and scholastic apptitude." American Psychologist, 1962, 17, 304.

Altus, W. D. Birth Order, Apptitude, and the Gottschaldt Test. Address presented at the American Psychological Association meeting, Chicago, September, 1965.

Altus, W. D. Birth Order and the Choice of College Major. Proceedings, 75th annual convention, American Psychological Association, 1968.

Bayley, N. "Comparisons of mental and motor test scores for ages 1-15 months by sex, birth order, race, geographical location and education of parents." Child Development, 1965, 36, 379-411.

Bender, I. E. "Ascendance-submission in relation to certain other factors in personality." Journal of Abnormal and Social Psychology, 1928, 23, 137-143.

Bliss, W. D. "Birth order of creative writers." Journal of Individual Psychology. 1970, 26, 200-202.

Bossard, J. H. S., and Boll, E. "Personality roles in the large family." Child Development, 1955, 26, 71-78.

Burton, D. "Birth order and intelligence." Journal of Social Psychology, 1968, 76, 199-206.

Capra, P. C. and Dittes, J. E. "Birth order as a selective factor among volunteer subjects." Journal of Abnormal and Social Psychology, 1962, 64, 302.

Chemers, M. M. "The Relationship between birth order and leadership style." Journal of Social Psychology, 1970, 80, 233-235.

Chittenden, E. A., Foan, W., Zweil, D. M., and Smith, J. R. "School achievement of first and second born children." Child Development, 1968, 39, 1123-1129.

Clausen, J. A. Family structure, socialization, and personality. In L. W. Hoffman and M. L. Hoffman (Eds.), Review of Child Development Research, Vol. II. New York: Russel Sage Foundation, 1966, pp. 1-53.

Cobb, S., and French, J. R. P. "Birth order among medical students." Journal of the American Medical Association, 1966, 195, 172-173.

de Lint, J. E. "Note on birth order and intelligence test performance." Journal of Psychology, 1967, 66, 15-17.

Douglas, J. W. B. The Home and the School: A Study of Ability and Attainment in the Primary School. London: MacGibbon and Kee, 1964.

Eisenman, R. "Birth order, insolence, socialization, intelligence, and complexity-simplicity differences." Journal of General Psychology, 1968, 78, 61-64.

Eisenman R., and Cherry, H. O. "Creativity, authoritarianism and birth order." Journal of Social Psychology, 1970, 80, 233-235.

Eisenman, R., and Robinson, N. "Complexity-simplicity, creativity, intelligence and other correlates." Journal of Psychology, 1967, 67, 331-334.

Elder, G. H. Adolescent Achievement and Mobility Aspirations. Chapel Hill, N. C.: Institute for Research in Social Science, 1962.

Ellis, H. A Study of British Genius. Boston: Houghton Mifflin, 1926.

Exner, J. E., and Sutton-Smith, B. "Birth order and hierarchical vs innovative role requirements." Journal of Personality, 1970, 38, 581-587.

Farber, B., and Jenne, W. C. "Interaction with retarded siblings and life goals of children." Marriage and Family Living, 1963, 25, 96-98.

Festinger, L. "A theory of social comparison processes." Human Relations, 1954, 7, 117-140

Galton, F. English Men of Science: Their Nature and Nurture. London: Macmillan, 1974.

Hall, E. E., and Barger, B. "Attitudinal structure of older and younger siblings." Journal of Individual Psychology, 1964, 20, 59-68.

Harris, I. D. The Promised Seed: A Comparative Study of Eminent First and Later Sons. Glencoe, Ill.: Free Press, 1964.

Harris, I. D., and Howard, K. L. "Birth order and responsibility." Journal of Marriage and the Family, 1968, 30, 427-432.

Nelson, R. "Effects of sibling characteristics and parental values on creative interest and achievement." Journal of Personality, 1968, 36, 589-607.

Henry, A. F. "Sibling structure and perception of disciplinary roles of parents." Sociometry, 1957, 20, 67-74.

Koch, H. L. "The relation of 'primary mental abilities' in five- and six-year-olds to sex of child and characteristics of his sibling." Child Development, 1954, 25, 209-223.

Koch, H. L. "Children's work attitudes and sibling characteristics." Child Development, 1956, 27, 289-310.

Krout, M. H. "Typical behavior patterns in twenty-six ordinal positions." Journal of Generic Psychology, 1939, 55, 3-30.

Lees, J. P., and Stewart, A. H. "Family or sibship position and scholastic ability." Sociological Review (British), 1957, 85-106.

Lichtenwalner, J. S., and Maxwell, J. W. "The relationship of birth order and socioeconomic status to the creativity of preschool children." Child Development, 1969, 40, 1241-1247.

Looft, W. R., and Baranowski, M. D. "Birth order, sex, and complexity-simplicity: An attempt at replication." Perceptual and Motor Skills, 1971, 32, 303-306.

Lunneborg, P. "Birth order, aptitude and achievement." Journal of Consulting and Clinical Psychology, 1968, 32(1), 101.

Lynn, D. B. Parental and Sex Role Identification: A Theoretical Formulation. Berkeley, California: McCutchan Publishing Corporation, 1969.

McArthur, C. "Personalities of first and second children." Psychiatry, 1956, 19, 47-54.

Newcomb, T., and Svehla, G. "Intra-family relations in attitudes." Sociometry, 1937, 1, 180-205.

Oberlander, M., and Jenkin, N. "Birth order and academic achievement." Journal of Individual Psychology, 1967, 23, 103-109.

Pfouts, Jane H. "the sibling relationship: a forgotten dimension." Social Work, Vol. 21, no. 3, May, 1976, 200-204.

Price, J. "Personality differences within families: Comparison of adult brothers and sisters." Journal of Biosocial Science, 1969, 1, 177-205.

Ring, K., Lipinsky, C. E., and Braginsky, D. "The relationship of birth order to self-evaluation, anxiety-reduction, and susceptibility to emotional contagin." Psychological Monographs, 1965, 79 (Whole No. 603).

Roberts, C. S. "Ordinal position and its relation to some aspects of personality." Journal of Genetic Psychology, 1938, 53, 173-213.

Roe, A. The Making of a Scientist. New York: Dodd, Mead, 1953.

Rosenberg, B. G., and Sutton-Smith, B. "Sibling age spacing effects on cognition." Developmental Psychology, 1969, 1, 661-668.

Rossi, A. "Naming children in middle class families." American Sociological Review, 1965, 30.

Rothbart, M. K. "Birth order and mother-child interaction in an achievement situation." Journal of Personality and Social Psychology, 1971, 17, 113-120.

Sampson, E. E. "Birth order, need achievement, and conformity." Journal of Abnormal and Social Psychology, 1962, 64, 115-159.

Sampson, E. E. The study of ordinal position: Antecedents and outcomes. In B. Moher (Ed.), Progress in Experimental Personality Research. New York: Academic Press, 1965.

Schachter, S. "Birth order, eminence, and higher education." American Sociological Review, 1963, 28, 757-768.

Schoonover, S. M. "The relation of intelligence and achievement to birth order, sex of sibling and age interval." Journal of Educational Psychology, 1959, 50, 143-146.

Schreiber, M., and Feeley, M. "Siblings of the retarded: I The guided group experience." Children, 1965, 12, 221-225.

Sears, R. R. "Ordinal position in the family as a psychological variable." American Sociological Review, 1950, 15, 397-401.

Sears, R. R., Maccoby, E., and Levin, H. Patterns of Child Rearing. Evanston, Ill.: Row, Peterson, 1957.

Sletto, R. F. "Sibling position and juvenile delinquency." American Journal of Sociology, 1934, 39, 657-669.

Smalley, R. E. "Two studies in sibling rivalry. II. The influence of differences in age, sex, and intelligence in determining the attitudes of siblings toward one another." Smith College Studies of Social Work, 1930, 1, 23-40.

Stock, W. A., and Looft, W. R. "Relationships among several demographic variables and the Change Seeker Index." Perceptual and Motor Skills, 1969, 29, 1011-1014.

Sutton-Smith, B., Roberts, J. M., and Rosenberg, B. G. "Sibling association and role involvement." Merrill-Palmer Quarterly of Development and Behavior, 1964, 10, 25-38.

Terman, L. M. Genetic Studies of Genius, Vol. I, The Mental and Physical Traits of a Thousand Gifted Children. Stanford, Calif.: Stanford University Press, 1925.

Vyks, R. "Eltern Vergleichen Ihre Beiden Kinder." Schweizerische Zeitschrift fur Psychologie und ihre Anwendungen, 1961, 20, 224-237.

Warren, J. R. "Birth order and social behavior." Psycholgical Bulletin, 1966, 65, 38-49.

West, S. S. "Sibling configuration of scientists." American Journal of Sociology, 1960, 66, 268-274.